

B. In the Claims:

1. (Amended) A positive electrode active material containing a lithium transition metal composite oxide represented by the general formula $\text{LiCo}_x\text{A}_y\text{B}_z\text{O}_2$ where A denotes at least one element selected from the group consisting of Al, Cr, V, Mn and Fe, and B denotes at least one element selected from the group consisting of Mg and Ca and x, y and z are such that $0.9 \leq x < 1$, $0.001 \leq y < 0.05$, and $0.001 \leq z < 0.05$; and

wherein a band-shaped positive electrode comprising a metal foil is coated with a positive electrode mixture containing the positive electrode active material and a binder, the metal foil being coated by the mixture on both surfaces of the metal foil; and the positive electrode being spirally wound with a negative electrode by interposing a separator in-between.

2. (Amended) A non-aqueous electrolyte secondary cell comprising:

(a) a positive electrode,

(b) a negative electrode, and

(c) a non-aqueous electrolyte interposed between ~~said~~ the positive and negative electrodes, ~~said~~ the positive electrode ~~using~~ having a positive electrode active material containing a lithium transition metal composite oxide represented by the general formula $\text{LiCo}_x\text{A}_y\text{B}_z\text{O}_2$ where A denotes at least one element selected from the group consisting of Al, Cr, V, Mn and Fe, and B denotes at least one element selected from the group consisting of Mg and Ca, and x, y and z are such that $0.9 \leq x < 1$, and $0.001 \leq y < 0.05$, and $0.001 \leq z < 0.05$; and the non aqueous electrolyte comprises a lithium salt dissolved in the electrolyte.

3. (Amended) ~~A~~ The non-aqueous electrolyte secondary cell according to claim 2, wherein ~~said~~ the negative electrode uses an active material capable of doping/undoping lithium ions; ~~said~~ the

active material ~~being such an active material~~ including a material selected from the group ~~comprising~~ consisting of a carbonaceous material, an alloy material, and a polymer including polyacetylene polymer.

4. (Amended) A ~~The~~ non-aqueous electrolyte secondary cell according to claim 3, wherein ~~said~~ the negative electrode active material, ~~capable of doping/undoping of lithium ion,~~ comprises a carbonaceous material which comprises at least one of a ~~is selected from the group of a~~ pyrocarbons, pitch coke, needle coke, petroleum coke, graphite, vitreous carbon fibers, sintered organic polymer compounds, carbon fiber, and activated charcoal.

5. (Amended) A ~~The~~ non-aqueous electrolyte secondary cell according to claim 3, wherein ~~said~~ the negative electrode is a material that can be alloyed with lithium and includes a compound represented by a chemical formula $M_xM'_yLi_z$ where M is a ~~typical~~ an element of the group ~~3A3B~~ or a metal other than the group ~~4A4B~~ excluding carbon, M' is one or more metal element other than the element Li and the element M, x is a numerical value larger than 0, and y, z are numerical values ~~not less~~ greater than 0.

6. (Amended) A ~~The~~ non-aqueous electrolyte secondary cell according to claim 2, wherein ~~said~~ the electrode is a band-shaped positive electrode coated with a positive electrode mixture containing the positive electrode active material on both surfaces of a metal foil; and a band-shaped negative electrode, ~~said positive~~ the negative electrode coated with a negative electrode mixture containing the negative electrode active material on both surfaces of a metal foil and ~~said the~~ negative electrode being stacked and ~~spinally~~ spirally wound by interposing a separator in-between.

7. (Amended) A The non-aqueous electrolyte secondary cell according to claim 2, wherein ~~said~~ the electrolyte is a solution of an electrolyte in a non-protonic non-aqueous solvent.

8. (Amended) A The non-aqueous electrolyte secondary cell according to claim 7, wherein ~~said~~ the electrolyte is a solution of a mixture of one or more ~~selected from~~ cyclic carbonates or chained carbonates.

9. (Amended) A The non-aqueous electrolyte secondary cell according to claim 7 ~~8~~ wherein ~~said~~ the electrolyte comprises, as the cyclic carbonate, ~~a solvent selected from the group~~ consisting of at least one of an ethylene carbonate, propylene carbonate, butylene carbonate, vinylene carbonate and gamma butyrolactone, ~~said~~ the electrolyte comprising, as the chained carbonate, a solvent selected from the group consisting of dimethyl carbonate, diethyl carbonate, and dipropyl carbonate.

10. (Allowed, Amended) A method for the preparation of a positive electrode active material comprising the steps of:

(a) mixing a cobalt compound, a lithium compound, a compound of at least one element selected from the group consisting of aluminum, chromium, vanadium, manganese and iron and a compound of at least one element selected from the group consisting of magnesium and calcium, at a pre-set ratio; and

(b) sintering a mixture from ~~said~~ the mixing step to produce a compound represented by the general formula $\text{LiCo}_x\text{A}_y\text{B}_z\text{O}_2$ where A denotes at least one element selected from the group consisting of Al, Cr, V, Mn and Fe, and B denotes at least one element selected from the group

consisting of Mg and Ca, and x, y and z are such that $0.9 \leq x < 1$, $0.001 \leq y \leq 0.05$, and $0.001 \leq z \leq 0.05$;

~~said~~ the compound of at least one element selected from the group selected from the group consisting of magnesium and calcium, as used in ~~said~~ the mixing step, being magnesium carbonate or calcium carbonate.

11. (Allowed, Amended) A method for the preparation of a non-aqueous electrolyte secondary cell comprising a positive electrode, a negative electrode, and a non-aqueous electrolyte interposed between ~~said~~ the positive and negative electrodes, comprising, in producing ~~said~~ the positive electrode, the steps of:

(a) mixing a cobalt compound, a lithium compound, a compound of at least one element selected from the group consisting of aluminum, chromium, vanadium, manganese and iron and a compound of at least one element selected from the group consisting of magnesium and calcium, at a pre-set ratio; and

(b) sintering a mixture from ~~said~~ the mixing step to produce a compound represented by the general formula $\text{LiCo}_x\text{A}_y\text{B}_z\text{O}_2$ where A denotes at least one element selected from the group consisting of Al, Cr, V, Mn and Fe, and B denotes at least one element selected from the group consisting of Mg and Ca, and x, y and z are such that $0.9 \leq x < 1$, and $0.001 \leq y \leq 0.05$, and $0.001 \leq z \leq 0.05$; and

~~said~~ the compound of at least one element selected from the group consisting of magnesium and calcium, as used in ~~said~~ the mixing step, being magnesium carbonate or calcium carbonate.

12. (Allowed, Amended) A ~~The method for the preparation of a non-aqueous electrolyte secondary cell~~ according to claim 11, wherein ~~said the~~ negative electrode ~~containing~~ contains an active material capable of doping/undoping lithium ions; ~~said the~~ active material is selected from the group consisting of a ~~comprising a~~ carbonaceous material; and a polymer including polyacetylene polymer.

13. (Allowed, Amended) A ~~The method for the preparation of a non-aqueous electrolyte secondary cell~~ according to claim 12, wherein ~~said the~~ negative electrode, ~~capable of lithium doping/undoping of lithium ion~~, comprises carbonaceous material which is selected from the group consisting of a pyrocarbon, pitch coke, needle coke, petroleum coke, graphites, vitreous carbon fibers, sintered organic high polymer compounds, carbon fiber, and activated charcoal.

14. (Amended) A ~~The method for the preparation of a non-aqueous electrolyte secondary cell~~ according to claim 12, wherein ~~said the~~ negative electrode is a material that can be alloyed with lithium and includes a compound represented by a chemical formula $M_xM'_yLi_z$ where M is a ~~typical~~ an element of the group 3A3B or a metal other than the group 4A4B excluding carbon, M' is one or more metal element other than the element Li and the element M, x is a numerical value larger than 0, and y, z are numerical values ~~not less~~ greater than 0.

15. (Amended) A ~~The method for the preparation of a non-aqueous electrolyte secondary cell~~ according to claim 11 wherein ~~said the~~ electrode is a band-shaped positive electrode coated with a positive electrode mixture containing the positive electrode active material on both surfaces of a metal foil, and a band-shaped negative electrode coated with a negative electrode mixture

containing the negative electrode active material on both surfaces of a metal foil, said the
positive electrode and said the negative electrode being stacked and wound spirally by
interposing a separator in-between.

16. (Allowed, Amended) A The method for the preparation of a non-aqueous electrolyte
secondary cell according to claim 11, wherein said the electrolyte is a solution of an electrolyte
in a non-protonic non-aqueous solvent.

17. (Allowed, Amended) A The method for the preparation of a non-aqueous electrolyte
secondary cell according to claim 16, wherein said the electrolyte is a solution of a mixture of
one or more selected from cyclic carbonates or chained carbonates.

18. (Allowed, Amended) A The method for the preparation of a non-aqueous electrolyte
secondary cell according to claim 16, wherein said the electrolyte uses, as the cyclic carbonate, a
solvent selected from the group consisting of ethylene carbonate, propylene carbonate, butylene
carbonate, vinylene carbonate and gamma butyrolactone, said the electrolyte using, as the
chained carbonate, a solvent selected from the group consisting of dimethyl carbonate, diethyl
carbonate, and dipropyl carbonate.

19. (Allowed, Amended) A The method for the preparation of a non-aqueous electrolyte
secondary cell according to claim 16, wherein said electrolyte comprises one of the inorganic
solid electrolyte and a high molecular solid electrolyte as material exhibiting lithium ion
conductivity.

20. (Allowed, Amended) A ~~The method for the preparation of a non-aqueous electrolyte~~
~~secondary cell~~ according to claim 16 wherein ~~said~~ the electrolyte comprises one or more lithium
salts selected from the group consisting of LiCl, LiBr, LiPF₆, LiClO₄, LiAsF₆, LiBF₄, LiCH₃SO₃,
LiCF₃SO₃, LiN(CF₃SO₂)₂, or LiB(C₆H₅)₄.